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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/331,127	10/19/1999	DONALD G. MUNROE	016777-0344	1284

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EXAMINER	
HAMUD, FOZIA M	
ART UNIT	PAPER NUMBER
1647	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/331,127	MUNROE ET AL.	
	Examiner	Art Unit	
	Fozia M. Hamud	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-24 and 26-43* is/are pending in the application.

4a) Of the above claim(s) *26* is/are withdrawn from consideration.

5)☒ Claim(s) *39 and 40* is/are allowed.

6)☒ Claim(s) *20,28-35,37,38,41 and 42* is/are rejected.

7)☒ Claim(s) *21-24,26,27 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received:

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1a. Receipt of Applicants' amendment and arguments, filed on 22 November 2006 is acknowledged.

Status of Claims:

1b. Claims 20-24, 26-43 are pending, of which claims 20-24, 26-35 and 37-43 are under consideration. Claim 36 stands withdrawn as being drawn to nonelected invention.

Formal Matter:

2. The disclosure is objected to because of the following informalities:

There are sequences on page 24 that lack sequence identifiers. Appropriate correction is required. See MPEP §2422.

Information Disclosure Statement:

3a. The information disclosure statement (IDS) submitted 22 November 2006 was received and complies with the provisions of 37 CFR §1.97 and §1.98. It has been placed in the application file and the information referred to therein has been considered as to the merits.

3b. The terminal disclaimer against U.S. Patent No. 6,077,949, filed on 11/22/2006 is acknowledged.

4. The following previous objections and rejections are withdrawn in light of Applicants amendment filed 11/22/06.

4a. The nonstatutory obviousness-type double patenting made against claims 20-35, 37, 41-43 as being unpatentable over claims 1, 2, 3, 4, 7, 8, and 9 of U.S. Patent No. 6,077,949, is withdrawn because Applicants filed a terminal disclaimer.

4b. The rejections of claims 27, 39-40 made under 35 U.S.C. 112, first paragraph for not enabling the full scope of the claimed invention and also for not complying with the written description, are withdrawn. Claim 39 has been amended to recite a specific amino acid sequence. Regarding claim 27, the recitation of 95% identity with functional language is within the scope of the enabled embodiments.

4c. The rejection of claims 20 and 26 made under 35 U.S.C. 112, second paragraph, is withdrawn because claim 26 has been amended. Regarding claim 20, Applicants argument that "... at least one amino acid substitution..." is not indefinite is found persuasive.

Response to Applicants' Amendment and Arguments:

Claim Rejections under 35 U.S.C. §112, first paragraph:

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5a. Claims 20, 28-35, 37-38, 41-43 standrejected under 35 U.S.C. § 112, first paragraph, because the specification, while being enabling for an isolated polynucleotide comprising a nucleotide sequence set forth in SEQ ID NO:11 encoding the protein comprising the amino acid sequence set forth in SEQ ID NO:2, a host cell that has been genetically engineered by the incorporation expressibly, therein of said

polynucleotide, and a method of identifying ligands for GLP-2 by using said cell, does not reasonably provide enablement for a mammalian homolog or a variant of the polypeptide of SEQ ID NO:12, or a polypeptide which is at least 80%, 90% or 95% sequence identity, which selectively binds to GLP-2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Applicants argue that the specification discloses that the claimed GLP-2 has the structural features common to G-protein coupled receptor class, including seven transmemebrane regions. Applicants contend the specification also discloses the rat GLP-2 receptor and indicates positions that are conserved. Applicants argue that the claimed homologs and variants must retain the structural qualities of a GLP-2 receptor and that the specification discloses guidance as to which changes to make. Applicants argue that the skilled artisan would recognize that 15% of the residues are non-conservative and would also be able to determine variants with the desired activity. Applicants point to figure 9, which shows that the rat GLP-2 sequence shares 82% identity to hGLP-2 over the relevant residues. Regarding claims 28-31, Applicants argue that "high stringency" is a term of art well understood and that the specification defines the term to mean conditions that identify polynucleotides that are 90% identical or more. Applicants point to pages 22 and 27 of the specification for support for the specific hybridization condition.

These arguments have been considered but are not deemed persuasive.

The claims encompass variant or a mammalian homolog of the polypeptide of SEQ ID NO:12. The specification states that the GLP2 of the invention includes mammalian homologs, as well as synthetic variants. The specification discloses the rat and human GLP-2 receptors, however, the disclosure of the two receptors does not enable claims that encompass "all possible" mammalian GLP-2 receptors, including yet to be discovered receptors. Furthermore, although the claims recite variants and homolgs that bind to GLP2, the claims do not require that the claimed variants and homolgs must have the structure recited in pages 5 and 6 of the specification. Even if 15% of the residues are non-conservative, it would be undue to produce variants or homolgs with the desired activity. To practice the instant invention in a manner consistent with the breadth of the claims would not require just a repetition of the work that is described in the instant application but a substantial inventive contribution on the part of a practitioner which would involve the determination of which of the numerous variats and homologs of the polypeptide of SEQ ID NO:12 would retain the desired activity. It is this additional characterization of the disclosed protein that is required in order to obtain the functional and structural data needed to permit one to produce a polypeptide which meets both the structural and functional requirements of the instant claim that constitutes undue experimentation. Applicant only discloses one variant of the polypeptide of SEQ ID NO:12 and the human and rat GLP2 receptors, however, Applicant fails to disclose the characteristics of all the innumerable variants and homolgs that the claims encompass, that would ensure the retention of the desired activity. Applicant has not described the properties or characteristics of variants,

homologs or fragments that are required for the functional integrity of the protein. Furthermore, while recombinant techniques are available, it is not routine in the art to screen large numbers of polypeptides that might potentially retain the desired activity, because the expectation of obtaining similar activity is unpredictable. Thus one of skill in the art would require additional guidance, such as information as to what structural features would result in variants homologs or fragments of the protein of SEQ ID NO:12, which retain the desired activity. Thus, to practice the invention commensurate with the scope of the claims would result in undue experimentation.

Regarding claims 28-31, although the specification defines "high stringency" to mean conditions that identify polynucleotides that are 90% identical or more, the conditions disclosed on pages 22 and 27 are not considered to be high stringency due to the low temperature of the washing conditions.

5b. claims 20, 28-35, 37-38 and 41-42, (claims 33-35, 37-38, which depend from claim 20, were inadvertently omitted from the rejection), stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, for reasons of record set forth in the office action mailed on 08/23/2006, pages 9-11.

Applicants argue that the specification discloses the full length human GLP-2, full length rat GLP-2, active truncated human GLP-2, active truncated rat GLP-2 and a point mutation variant. Thus Applicants contend that unlike Fiddes v, Baird, 30 USPQ2d 1481, which showed a single sequence, the instant specification discloses 5 sequences. Applicants submit that it is unnecessary and undesirable to recite every species within a genus, because the skilled artisan would recognize from the five species that the

inventors had possession of the invention. Furthermore, Applicants submit that the specification discloses specific domains and that these domains tend to be conserved between rat and human. Applicants also argue that the specification provides functional characteristics of the GLP-2 receptor, immunogenic fragments and functional assays to demonstrate activity and also disclose a step by step for isolating "one million cDNA clones" of human GLP-2 receptors.

These arguments have been considered, but are not deemed persuasive. Applicants are correct in the specification discloses five sequences, however, the disclosure of five sequences does not provide written description for the claimed genus. The instant specification describes "variants" as encompassing: naturally occurring variant as well as synthetic variants, (see page 8). However, the instant specification discloses only five nucleic acid sequences, which is not representative of the claimed genus, which includes "all possible variants", including naturally occurring and non-naturally occurring. It is acknowledged that the specification need not recite every species within a genus, however, in the instant case the disclosure of the five GLP-2 sequences does not provide written description for the claimed genus which encompasses "all possible" mammalian homologs, "all possible" variants and "all possible" nucleic acid which hybridize to nucleic acid which encodes the polypeptide of SEQ ID:12, or its complement. Furthermore, neither the specification nor the claims place any limit on the number of amino acid substitutions, that may be made to SEQ ID NO: 12. Although it appears that the transmembrane domains are somewhat conserved between the rat and the human GLP-2 receptors, it also appears that there is

quite a difference between the extracellular domains. The issue is not how to isolate cDNA encoding GLP-2 receptor, the issue is, does the specification disclose representative number of species for the claimed genus, which encompass "all possible variants", "all possible mammalian homologs", which include yet unidentified receptors. Regarding claim 29, an oligonculeotide that comprises at least 15 nucleotides and hybridizes to the polynucleotide recited in claim 20, would not be expected to encode the proteins recited in claim 20.

Claim Rejections Under § 112, second paragraph:

6. The rejection of claims 28-31 made under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, is maintained for reasons of record.

Applicants argue that "high stringency" is a term of art well understood and that the specification defines the term to mean conditions that identify polynucleotides that are 90% identical or more. Applicants point to pages 22 of the specification for support for the specific hybridization condition.

This is considered, but is not deemed persuasive. Athough the specification defines "high stringency" to mean conditions that identify polynucleotides that are 90% identical or more, the conditions disclosed on pages 22 are not considered to be high stringency due to the low temperature of the washing conditions.

Reciting the specific hybridization conditions, which Applicant considers to be "high stringency", that are supported by the specification in the claim would obviate this rejection.

Claim Objections:

7. Claims 21-24, 26, 27, 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion:

8. Claims 39 and 40 are allowable.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Advisory Information:

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fozia M. Hamud whose telephone number is (571) 272-0884. The examiner can normally be reached on Monday, Thursday-Friday, 6:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda G. Brumback can be reached on (571) 272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Fozia Hamud
Patent Examiner
Art Unit 1647
08 November 2006

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